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PRINTED: 05/30/2002

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES AZMILS DATA

PRIMARY NAME: PETERSON MINE

ALTERNATE NAMES:
COPPER DOG

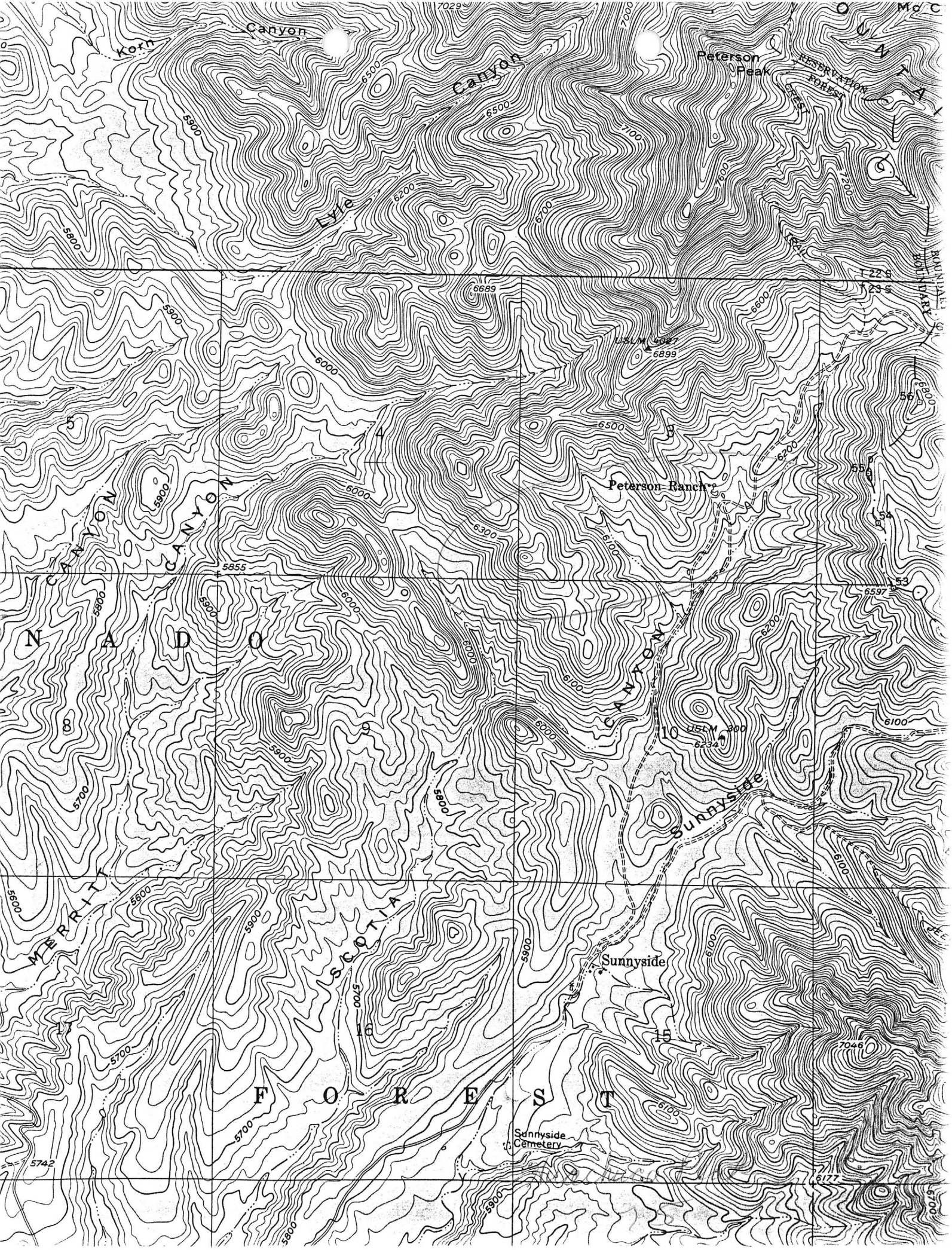
COCHISE COUNTY MILS NUMBER: 126

LOCATION: TOWNSHIP 23 S RANGE 19 E SECTION 3 QUARTER S2
LATITUDE: N 31DEG 27MIN 18SEC LONGITUDE: W 110DEG 24MIN 00SEC
TOPO MAP NAME: HUACHUCA PEAK - 7.5 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:
COPPER OXIDE
SILVER
GOLD LODE

BIBLIOGRAPHY:
KEITH, S.B., 1973, AZBM BULL. 187, P. 66
WEBER, ROBERT H., U OF A THESIS, 1950
ADMMR PETERSON MINE FILE


Korn Canyon
Lyle Canyon
Peterson Peak
RESERVATION FOREST
CREST
TRAIL
BOUNDARY
T 22 S
T 23 S
USLM 5027
6899
6689
Peterson Ranch
CANYON
CANYON
CANYON
N A D O
Sunnyside
USLM 300
6234
Sunnyside
MERRITT
SCOTIA
Sunnyside Cemetery
F O R E S T
5855
5742
6177
7046
6597

# ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES

## VERBAL INFORMATION SUMMARY

1. Mine file: PETERSON MINE
2. Mine name if different from above: Copper Dog
3. County: Cochise (MILS 126)
4. Information from: Jim Hathaway

   Company:

   Address: Tucson

   Phone: 884-1254

5. Summary of information received, comments, etc.:

Judge Hathaway owns the six patented claims of the Copper Dog Group (AKA Peterson Mine) in the Huachuca Mountains. A department engineer was requested to examine the property, when convenient. The claims are for sale or lease. Gold-quartz veins are reported to occur on the property.

Date: June 1989

Harrison E. Matson, Mining Engineer

James Hathaway came in office with sample from his Copper Dog mine, Sunnyside district Cochise County, Hachuca Mountains. Took sample to ABM. GI WR 4-23-74

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James Hathaway in regard to mineral valuation of his patented claims in the Huachuca Mts Asked about having David Lowell do the work. Told him Mr Lowell had excellent credentials. The mine is located in the Huachuca Mts. S. 3, T23S R19E. It is known as the Copper Dog, Peterson or the Sylvannia. GWI WR 2/13/76

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MG WR 4/2/82: Sunchief Mines Co., 742 Twelve Oaks Center, 15500 Wayzata Blvd., Wayzata, Minn. 55391, has staked the Korn Canyon Claims 1 - 100 in the Huachuca Mountains of Cochise County. The claim group is in the Peterson Peak area (Sunnyside 15' quad.), and is chiefly in Secs. 28, 29, 32 and 33 T22D R19E and Sec. 3, 4, and 5, T23S R19E. This claim group appears to encompass the Copper Dog (Paterson) mine.

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COPPER DOG.. S3 - T23S R19E
PETERSON
Sylvania
Pat Claims

COLLEGE OF MINES AND ENGINEERING
OFFICE OF THE DEAN

RECEIVED
APR 25 19[illegible]
DEPT. MINERAL RESOURCES
PHOENIX, ARIZONA

# REPORT ON THE PROPERTY OF THE COPPER DOG MINING COMPANY.

## Object of the examination.

This report is based on data secured during two full days spent on the property. The main objects of this examination were to ascertain the geological conditions existing on the property; to determine the nature of the ore deposits thereon; and to observe features bearing upon their probable extent and persistence with depth.

## Location of the property.

The property of the Copper Dog Mining Company is located in the Fort Huachuca Mining District, Cochise County, Arizona, on and in the vicinity of Peterson's Peak, in the northwestern part of the Huachuca Mountains. It is almost due east of Nogales, the distance by wagon road being either forty-two or forty-six miles depending upon the route selected. Fort Huachuca is about 12 miles east of north of the property, and there is a good auto road from the fort to within about six miles of the property. A fair trail connects the claims with this road. Large, heavy shipments would probably have to be hauled about fifteen miles southeasterly to the Mexican railroad. The road leading thither could be made good at moderate expense.

Area Controlled by the Company.

The writer made no attempt to trace the boundaries of the claims, nor to collect data which would enable him to draw an accurate map of them. From information gathered on the ground, he believes that the sketch map of the claims already drawn by the Mineral Engineering and Drafting Company, of Pittsburg, is a substantially correct delineation of the property ~~owned~~ controlled by the Copper Dog Mining Company.

The Company controls five full claims, 1500 feet long by 600 feet wide, known as the "Crescent," "Pearl," "Copper Dog," "Western Star," and "Rose Nut; and is arranging to acquire other property in the immediate vicinity.

No attempt was made to investigate the title to these claims, but it is understood that the Company holds them on bond to purchase given by the locator, and that the title is in every respect clear. None of the claims are patented.

General Geology of the District.

Many thousands, and probably millions, of years ago the rocks of this district probably consisted largely of horizontal layers of sedimentary material, including one thick bed of conglomerate. This conglomerate was composed of fragments of many different rocks including limestone, quartzite, various igneous rocks, and other material. The size of these fragments varied from a foot or more in diameter down to small grains of sand, and their shape from smoothly rounded to sharply angular. Angular fragments are so plentiful that the rock might well be designated a breccia instead of a conglomerate.

by cementation with silica and iron oxide, this thick bed of fragmental material was consolidated and indurated so as to form hard rock.

After the formation of the conglomerate just described, and, doubtless, after thick beds of other material had accumulated on top of the conglomerate, an enormous quantity of molten rock magma accumulated beneath the conglomerate bed, and lifted it and the overlying material a considerable distance whose extent is unknown, but which must have a maximum of at least 1,000 feet. This accumulation of molten material was very thick near the center and thinned rather suddenly toward the edges, giving the conglomerate bed a somewhat dome-like form. In solidification, the molten magma became a basalt which in this case is a dark red rock of rather fine grain, which usually shows small, white crystals of plagioclase feldspar, and is in many places full of rounded grains and veinlets of calcite, a soft, white carbonate of lime. These calcite grains fill cavities originally formed by the presence of gas bubbles in the molten magma. At some points the basalt has been altered to a hard, green substance called epidote which suggests the presence of copper, but contains none of that element.

Still later one or more dikes of a different type of molten material broke through the rocks already formed and solidified as a fine grained, nearly white rock known as felsite porphyry. At least one such dike was found west of Peterson's Peak, and in the same vicinity was noted another

dike of igneous rock which may be designated diabase. This is a medium-coarse-grained rock composed of white plagioclase crystals and dark pyroxene.

Still later the shrinking and settling of the cooling igneous masses, together, perhaps, with other forces, caused more or less fracturing of the basalt and associated rocks, and lead to the formation of numerous slips or faults therein.

Still later solutions from below worked up through the fault fissures and deposited quartz, calcite, siderite, and ore minerals, forming the veins now found on the property.

Finally, the whole mass was subjected to extensive erosion by wind, rain, and running water, and sculptured so as to leave it in its present form. We now find Peterson's Peak largely composed of the basalt with a thick capping of conglomerate on top, and smaller exposures of the same rock on the flanks.

It should be mentioned that the time spent in the field was too short to prove positively that the outline of events just suggested is correct in every particular, but it is believed to be substantially as given.

Description of the Ore Deposits and Development Work.

Crescent Claim: On the Crescent Claim are a number of small quartz veins which dip at varying angles to the westward, and have a general north-south strike. Their outcrops usually average between eight inches and a foot in width, although thicker portions were noted.

The outcrops seen consist principally of more or less iron-stained quartz which is coarsely crystalline, and not infrequently exhibits a comb structure formed by the growth of quartz crystals outward from both walls of the fissure and the failure of these crystals to meet and completely coalesce in the center of the vein. Quartz crystals a quarter of an inch or more in diameter are fairly common. The iron stain is usually the hydrous oxide of iron called limonite, and was doubtless formed by the alteration of some sulphide containing iron. The absence of copper stains indicates that this sulphide was a pure sulphide of iron, such as pyrite.

It is claimed that particles of free gold are sometimes visible in these veins, but none of these were observed during the examination.

So little work has been done upon these veins, and the exposures are of such limited extent that it was not considered worth while to sample them. The scant attention paid to them seemed justifiable in view of the fact that the Company is principally interested in the copper deposits.

The veins on the Crescent Claim have been opened at several points by small open cuts, but most of these have been more or less filled with wash from the mountain side.

A cross-cut tunnel 60 feet long has been driven toward one of the more prominent veins, but the latter has not yet been cut.

Pearl Claim: The discovery tunnel and mine on the Pearl Claim shows a very pronounced fault fissure vein which strikes about N. 27° E. north of the mine, and nearly north to the south thereof. The vein dips about 40° to the westward in the mine but flattens near the outcrop.

This vein is composed mostly of quartz, but contains varying quantities of bornite (a reddish brown sulphide of copper and iron), chalcopyrite (a brass yellow sulphide of copper and iron), and smaller quantities of other copper minerals including tennantite (a dark gray sulph-arsenite of copper carrying considerable silver, and commonly called gray copper), and, possibly, chalcocite (a dark gray sulphide of copper).

The vein varies from two to twelve inches in width, but the country rock (basalt) on both sides is more or less sheared and mineralized by small veinlets connected with the main vein. It seems likely that this mineralized country rock will yield considerable concentrating ore.

The visible ore minerals are not distributed uniformly through the vein, but are, rather, present in bunches of considerable size separated from each other by several feet of relatively barren quartz. While it is likely that the whole vein, as well as a foot or so of the country rock on each side in some places will furnish profitable concentrating ore, the vein-filling proper will have to be hand-sorted in order to yield a high-grade shipping product.

A sample of this vein taken in such a way as to represent a grade of material which can be easily secured

by hand-sorting is 40.1 ounces of silver, and 1.72 ounces of gold per ton, and 6.98 per cent copper. At current metal prices, this material is worth $[illegible].77 a ton.

In the mine, which is near the surface, and near the outcrop the ore minerals are mostly copper carbonates (both the blue mineral called azurite and the green one called malachite), but these will doubtless give place to sulphides at slightly greater depth.

It is claimed that another similar vein parallels the main one about thirteen feet above it and to the west. A little vein material is exposed on the surface at that point, but insufficient development work has been done to prove that it is in place.

The development work on this claim comprises a tunnel about 50 feet long driven along the strike of the vein, and an inclined winze 32 feet deep and driven down the dip of the deposit.

Copper Dog Claim: The Copper Dog tunnel shows two fault fissure veins in basalt, similar to that on the Pearl Claim, which average about eight inches wide, and are separated by two feet or more of mineralized ground. The veins strike approximately north-south and dip 80° to the west near the surface, but steepen further in.

The principal ore mineral in the quartz veins is chalcocite, a very rich sulphide of copper, although some bornite and tennantite are present, and large quantities of copper carbonates have formed near the outcrop. The gangue mineral differs from that in the Pearl vein in that there is

considerable brown carbonate of iron, called siderite, present, and this is said by those who have worked the property to be invariably associated with high copper values.

Although the deposit differs somewhat from that shown in the Pearl tunnel, it is not impossible that they are on the same vein, or at least along the same zone of mineralization.

Mineralized rock is not only found between the two quartz veins, but is also developed at some points above and below these veins. It is claimed that several feet of this material are exposed in the breast of a drift run from the bottom of an incline connected with the main tunnel. As this was under water at the time of the examination, it could not be sampled; but considerable material on the dump which is said to have come from the point mentioned was sampled and proved to contain 3.1 ounces of silver, and 0.03 ounces of gold per ton, and 6.03 per cent copper. It also contains 2.33 per cent of sulphur. At current metal prices, this material is worth $41.51. a ton. As the copper is undoubtedly present as a sulphide, it should be possible to concentrate this ore by flotation to a high grade product.

Four and a half feet of malachite-stained mineralized rock between the two quartz veins exposed at the outcrop of the deposit was sampled, and proved to contain 1.6 ounces of silver and 0.05 ounces of gold per ton, and 1.72 per cent copper. At current metal prices this ore is worth $15.21 a ton. It is so badly leached that it was not expected that it would

run well, but the fact that it contains appreciable amounts of the elements mentioned helps to substantiate the statements relative to the value of the material in the breast of the lower drift.

One hundred and twenty-five feet southwest of the main tunnel is a small cut showing at one point the two quartz veins separated by about two feet of mineralized ground, which serves to prove the persistence of this deposit. In this cut the thickness of the mineralized ground varies between four inches and five feet, indicating that considerable irregularity may be expected, but that the average thickness is quite satisfactory.

The tunnel on this deposit is about 130 feet long. At a point 90 feet from the mouth a 25 feet incline has been driven at an angle of 35° from the horizontal. At the bottom of the incline a drift about 15 feet long is said to have been run. Both the incline and lower drift were under water at the time of the examination, but have since been unwatered, and I understand that careful sampling of the material exposed in the breast is to be done.

Western Star Claim: The deposits of this claim were not examined, but are said to be similar to those on the Pearl.

Rose But: The Rose But Claim is some distance west of the main group, and the main shaft exposes about a foot and a half of iron-stained quartz in fault fissure vein form. This quartz strikes N. 60° W., and dips about

20° to the south. Both foot and hanging walls are felsite porphyry. The vein is said to widen materially at the bottom of the shaft, but caving of the ground has made it impossible to substantiate this claim.

About thirty tons of ore on the dump were sampled and proved to contain 0.10 ounces of gold and 0.02 ounces of silver per ton, worth at current metal prices $2.55 a ton. As the gold is present in the metallic condition, it is not unlikely that this assay does an injustice to the deposit. It is said that careful sampling of the material in the shaft yielded an assay running $10.00 in gold, and ten ounces of silver per ton, with a trace of copper.

The shaft, which is now caved in, is said to be thirty feet deep, and the deposit has been opened up at one or two other points by small open cuts.

Conclusion as to the Commercial Importance of the Deposits.

The property of the Copper Dog Mining Company should be regarded as a prospect rather than a mine. There are, however, several encouraging features which make it seem probable that a profitable mine may be developed here if the proper methods are followed.

The vein on the Pearl Claim can be made to yield considerable shipping ore of fairly high grade at comparatively moderate expense. This vein is so small, however, that it is doubtful if the property could pay dividends on any considerable capitalization if this were the only asset of the Company.

I believe that the veins and mineralized rock on the Copper Log Claim can be made to yield a large quantity of good concentrating ore amenable to the flotation process, and that most of the efforts of the Company should be expended upon the development of this deposit.

It will require further investigation to prove whether the veins on the Crescent, Rose Nut, and Western Star Claims are also worthy of development.

It should be mentioned that all the veins examined are of a type which may be expected to persist for considerable distances both horizontally and with depth. They will all, however, vary in width frequently and suddenly. If a pinch is encountered, this should occasion no anxiety as it will almost certainly be followed by a swell.

General Considerations.

Timber: Plenty of wood for domestic purposes is present on the property, and sufficient for timbering openings can doubtless be secured from the Forest Service, as the country is well timbered, although most of the trees are comparatively small. It should, perhaps, be mentioned that the basalt stands up well, and little timbering will be required excepting, possibly, in large stopes.

Water: There are many seepages and springs of considerable size in the valley southeast of Peterson's Peak, and I have no doubt that sufficient water for concentration and domestic purposes can be developed here, although some pumping may be required.

There is said to be sufficient water for concentration purposes in the gulch below the Rose Cut vein, but time was too limited to substantiate this statement.

Recommendations.

I would recommend that a trail be built immediately from the Pearl tunnel to the end of the automobile road to Fort Huachuca, and that the high grade-ore readily mined from the Pearl vein be shipped by pack train and automobile to the smelter. This should yield some profits which can be utilized in the development of the Copper Dog deposit.

I further recommend that the Copper Dog deposit be extensively developed, and that a mill capable of concentrating this ore by flotation be installed if the amount and character of the ore developed appears to warrant this action.

I also recommend that the claims be carefully surveyed, and that a topographical and geological map of the whole property be made.

If the resources of the Company are sufficient to permit doing so, it will probably be wise to do a little further work upon the three claims whose value seems doubtful, but I believe that most of the efforts of the Company should be confined to the Copper Dog and Pearl Claims. Eventually it will probably be desirable to confine work to the former, since a fairly large low-grade deposit will almost certainly yield greater profits than a small one even if of high grade.

Respectfully submitted,



March 7, 1917.